



Reducing Manipulability

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► To cite this version:

François Durand, Fabien Mathieu, Ludovic Noirie. Reducing Manipulability. Fifth International Workshop on Computational Social Choice (ComSoC - 14), Jun 2014, Pittsburgh, United States. 2014. hal-01095992

HAL Id: hal-01095992

<https://hal.archives-ouvertes.fr/hal-01095992>

Submitted on 16 Dec 2014

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CRITERIA FOR VOTING SYSTEMS

Veto...

Set of voting systems

Borda...

Informed majority coalition criterion (**InfMC**)

A majority may choose the outcome when they know the other votes.

Range voting, Approval, Coombs...

Ignorant majority coalition criterion (**IgnMC**)

A majority may choose the outcome.

Plurality, Two-round, IRV, Bucklin...

Majority favorite criterion (**MF**)

Elects a candidate when she is preferred by a majority.

Baldwin, Dodgson, Kemeny, Maximin, Nanson, Schulze, Tideman...

Condorcet criterion (**Cond**)

Elects the Condorcet winner when there is one.

GOAL: MINIMIZE THE MANIPULABILITY RATE

$$\rho(f) = \mathbb{P}(\text{voting system } f \text{ is manipulable})$$

TRANSFORMATIONS

f

Initial voting system f

f^c

Condorcification of f

- Elects Condorcet winner when she exists.
- Otherwise, same outcome as f .

f^{cs}

Best slice of f^c

- Depends only on orders of preference.
- Meets the Condorcet criterion.

CONDORCIFICATION THM.

If f meets **InfMC**:

$$\rho(f^c) \leq \rho(f).$$

SLICING THEOREM

If voters are independent:

$$\rho(f^{cs}) \leq \rho(f^c).$$

CONSEQUENCES

To minimize manipulability while keeping **InfMC**, one may restrict to voting systems that:

- Depend only on orders of preference,
- And meet the Condorcet criterion.